CHAPTER 6: PREVENTION PROGRAM (PROGRAM 2)

6.1 ABOUT THE PROGRAM 2 PREVENTION PROGRAM

If your warehouse is ineligible for Program 1 and the substances you have above the threshold are not covered by OSHA's PSM standard, you have a Program 2 process. For most facilities covered by EPA's rule, the prevention program will be slightly different for each covered process because the hazards and equipment will be different and, therefore, the training and procedures will differ. For warehouses that simply store materials (as opposed to repackaging them), however, the prevention program is likely to be essentially the same for all covered substances. Procedures for moving and stacking containers, operating forklifts and other equipment, and segregating substances will be common to all substances stored. If you start storing a new class of hazardous substances you may have to address segregation issues, but once you have, your procedures and safety information will mainly be the same.

Because of this common approach to prevention, you will probably want to treat your whole building as one process. You should address any differences in the hazard review and safety information, but you should develop a single prevention program that includes all covered substances within a building. If you have more than one building at your facility, you will need to develop separate prevention programs for each building with regulated substances above the threshold. Procedures that are common across buildings need not be duplicated.

The Chemical Manufacturers' Association (CMA), in coordination with the International Warehouse Logistics Association (IWLA) has developed a *Warehouse Assessment Protocol*. The Protocol includes some items that are not covered by the rule (e.g., package labeling), but many of the checklists will be useful in developing your prevention program. Reviewing and adapting applicable parts of the Protocol to your specific operations can save you time while helping you identify issues of concern.

There are seven elements in the Program 2 prevention program, which is Subpart C of part 68. Exhibit 6-1 sets out each of the seven elements and corresponding section numbers.

You must integrate these seven elements into a risk management program that you and your staff implement on a daily basis. Understanding and managing risks must become part of the way you operate. Doing so will provide benefits beyond accident prevention as well. Preventive maintenance and routine inspections will lessen the number of equipment failures and down time.

EXHIBIT 6-1
SUMMARY OF PROGRAM 2 PREVENTION PROGRAM

Number	Section Title
§ 68.48	Safety Information
§ 68.50	Hazard Review
§ 68.52	Operating Procedures
§ 68.54	Training
§ 68.56	Maintenance
§ 68.58	Compliance Audits
§ 68.60	Incident Investigation

6.2 SAFETY INFORMATION (§ 68.48)

The purpose of this requirement is for you to understand the equipment and chemicals you have, know what limits they place on your operations, and adopt accepted standards and codes where they apply. Having up-to-date information about your process is the foundation of an effective prevention program. Many elements (especially the hazard review) depend on the accuracy and thoroughness of the information this element requires you to provide.

WHAT DO I NEED TO DO?

You must compile and maintain safety information related to the regulated substances and process equipment for each Program 2 process. You probably have much of this information already, because you would have developed it to comply with OSHA or other rules. EPA has limited the information to what is likely to apply to the processes covered under the Program 2 program. Exhibit 6-2 gives a brief summary of the safety information requirements for Program 2.

HOW DO I START?

MSDSs. You are required to maintain Material Safety Data Sheets under the OSHA Hazard Communication Standard (HCS) (29 CFR 1910.1200). If you are a public warehouse, you should obtain the MSDSs from your customers. If you do not have an MSDS for a regulated substance, you should contact your customer or the manufacturer for a copy. Because the rule states that you must have an MSDS that meets OSHA requirements you may want to review the MSDS to ensure that it is, in

EXHIBIT 6-2
SAFETY INFORMATION REQUIREMENTS

You must compile and maintain this safety information:	You must ensure:	You must update the safety information if:
U Material Safety Data Sheets **U** Maximum intended inventory **U** Safe upper and lower parameters **U** Equipment specifications **U** Codes & standards used to design, build, and operate the process and building	**U** That the process is designed in compliance with recognized codes and standards	**U** There is a *major change* at your business that makes the safety information inaccurate

fact, complete. Besides the chemical name, the MSDS must have physical and chemical characteristics (e.g., flash point, vapor pressure), the physical hazards (e.g., flammability, reactivity), the health hazards, the routes of entry, exposure limits (e.g., the OSHA permissible exposure level), precautions for safe handling, generally applicable control measures, and emergency and first aid procedures. (See 29 CFR 1910.1200(g) for the complete set of requirements for an MSDS.)

MSDSs also are available from a number of websites. The University of Vermont provides access to three university-maintained MSDS collections through its website, http://www.hazard.com. The on-line databases usually have multiple copies of MSDSs for each substance and can help you find an MSDS that is well organized and easy to read. EPA has not verified the accuracy or completeness of MSDSs on any of these sites nor does it endorse any particular version of an MSDS.

Maximum Inventory. You must document the maximum intended inventory of any vessel that contains a regulated subject is part of a covered process. This requirement, when applied to warehouses, means that you must document the sizes of vessels that you store. Your customers can provide information on the capacity of the drums, barrels, cylinders, etc., that they store at your facility. You may also want to consider documenting the maximum storage capacity of areas where you store regulated substances. If you are doing predictive filing, as described in Chapter 1, section 1.8, you will want to keep a record of the sizes of vessels you may be storing.

You may want to check with the trade association or standards groups, such as NFPA, that develop standards for your industry to determine if there are any limitations on inventories. For example, fire codes may limit the size of individual

flammable storage areas to less than 40,000 square feet. Codes or standards may set stack height limits. These standards will limit your maximum inventories.

Storage and Process Limits. You must document the safe upper and lower temperatures and pressures, process flows, and compositions (the last three items will generally not be applicable to warehouses).

Every substance you store or use will have limits on temperature, which will be determined by both the properties of the substance and the vessels. If you do not know these limits, you should contact your customer, the substance manufacturer (if different), or your trade association. They will be able to provide the data you need. It is important that you know these limits so you can avoid situations where these limits may be violated. Many people are aware of the dangers of exposing their vessels to high temperatures, but extreme low temperatures also may pose hazards you should know about.

Equipment Specifications. You must document any equipment you use to store, repackage, or move regulated substances. Equipment specifications will usually include information on the materials of construction, actual design, and tolerances. The vendor should be able to provide this information; you may have the specifications in your files from the time of purchase. You are not expected to develop engineering drawings of your equipment to meet this requirement. For warehouses, this requirement will apply mainly to forklifts and other equipment used to lift or move drums, barrels, pallets, etc., as well as storage racks. It is important that you understand the limitations on this equipment so that it can be operated and used properly.

The actual containers for the regulated substances should be designed to meet DOT performance oriented packaging rules. You need only ensure that containers you store meet DOT specifications; you do not need to maintain copies of the DOT specifications unless you package regulated substances at your warehouse.

Codes and Standards. You must document the codes and standards you used to design and build your facility and that you follow to operate. These codes will include the electrical and building codes that you must comply with under state laws. Besides the construction of the building, you should consider racks that you use for storage, sprinkler systems, heating and ventilation systems, and any other equipment or design features that affect the safety of your warehouse. Exhibit 6-3 lists some codes that may be relevant to your operation.

Note that the National Fire Protection Association (NFPA) codes may have been adopted as state or local codes. The American National Standards Institute (ANSI) is an umbrella, standards-setting organization, which imposes a specific process for gaining approval of standards and codes. ANSI codes may include codes and standards also issued by other organizations, which are incorporated by reference.

The CMA *Warehouse Assessment Protocol* has a section on loss prevention (section 4 of the protocol) that can help you identify areas of concern on design.

EXHIBIT 6-3
CODES AND STANDARDS

Organization	Subject/Codes
American National Standards Institute (ANSI)	Piping, Electrical, Power wiring, Instrumentation, Lighting, Product storage and handling, Insulation and fireproofing, Painting and coating, Ventilation, Noise and Vibration, Fire protection equipment, Safety equipment, Pumps, Compressors, Motors, Refrigeration equipment, Pneumatic conveying
National Fire Protection Association (NFPA)	Fire pumps, Combustible liquid code, Flammable liquid code, Plant equipment and layout, Electrical system design, Shutdown systems, Venting requirements, Gas turbines and engines, Storage tanks, Gas code
American Society for Testing Materials (ASTM)	Inspection and testing, Noise and vibration, Materials of construction, Piping materials and systems, Instrumentation

HOW DO I DOCUMENT ALL THIS?

EPA does not expect you to develop piles of papers to document your safety information. Your MSDS(s) are usually three or four pages long. You only have to keep them on file, as you already do for OSHA. Equipment specifications are usually on a few sheets or a booklet provided by the vendor; you need only keep these on file. You can probably document the other information on a single sheet that simply lists each of the required items and any codes or standards that apply. See Exhibit 6-4 for a sample. Maintain that sheet in a file and update it whenever any item changes or new equipment is added.

The equipment specifications and list of standards and codes will probably meet the final requirement, that you ensure that your process is designed in compliance with recognized and generally good engineering practices. If you have any doubt that you are meeting this requirement, you should contact your trade association to determine if there are practices or standards that you are not aware of that may be useful in your operation.

EXHIBIT 6-4
SAMPLE SAFETY INFORMATION SHEET

REQUIREMENT	CURRENT DATA/LIMITS
MSDSs on file Nitric Acid Hydrochloric Acid Hydrofluoric Acid Acrylonitrile Flammable mixtures	Data of last update: 1994 1996 1995 1997 5 mixtures (1998, 1997, 1999)
Maximum Intended Inventory	Largest Vessel: 55-gallon drums Maximum storage in any section 1,000 drums Maximum area storage for flammables 30,000 square feet. Aerosol (flammable) storage less than 100 cubic feet
Temperature	Upper: Lower:
Equipment Specifications Fork lifts Sprinkler system Wet system Foam system Rack system Storage racks Exhaust fans Fire extinguishers Alarm system	Specifications on file: Last update, 1992 Construction drawings and specifications Construction drawings and specifications Construction drawings and specifications Manufacturer's specifications (1985) Manufacturer's specifications (1993) Manufacturer's specifications (1995) Manufacturer's specifications (1985)
CODES AND STANDARDS	
Building construction Floor Interior walls Ceiling Fire doors	State building and fire code met
Electrical	State electrical code met
Sprinkler system	State building code; NFPA met
Ventilation system	State building code met
Racks	
Stack heights, separations	

After you have documented your safety information, you should double check it to be sure that the files you have reflect the equipment you are currently using. It is important to keep this information up to date. Whenever you replace equipment, be sure that you put the new equipment specifications in the file and consider whether any of your other prevention elements need to be reviewed to reflect the new equipment.

6.3 HAZARD REVIEW (§ 68.50)

The hazard review will help you determine whether you're meeting applicable codes and standards, identify and evaluate the types of potential failures, and focus your emergency response planning efforts.

WHAT DO I NEED TO DO?

The hazard review is key to understanding your operation and continuing to operate safely. You must identify and review specific hazards and safeguards of your Program 2 processes. Exhibit 6-5 summarizes things you must do for a hazard review.

EXHIBIT 6-5
HAZARD REVIEW REQUIREMENTS

Conduct a review & identify...	Use a guide for conducting the review.	Document results & resolve problems.	Update your hazard review.
U The hazards associated with the Program 2 process & regulated substances. **U** Opportunities for equipment malfunction or human error that could cause a release. **U** Safeguards that will control the hazards or prevent the malfunction or error. **U** Steps to detect or monitor releases.	**U** You may use any checklist (such as you might in a model risk management program) to conduct the review. **U** For a process designed to industry standards like NFPA-58 or Federal /state design rules, check the equipment to make sure that it's fabricated, installed, and operated properly.	**U** Your hazard review must be documented and you must show that you have addressed problems.	**U** You must update your review at least once every five years or whenever there is a major change in the process. **U** You must resolve problems identified in the new review *before* you startup the changed process.

HOW DO I START?

There are three possible approaches to conducting a hazard review; which you use will depend on your particular situation.

Processes designed to industry-specific codes. If all or part of your warehouse and its operation was designed and built to comply with a federal or state standard for that operation or an industry-specific design code, your hazard review will be relatively simple. The standard-setting organization has already conducted a hazard review, identified the hazards, and designed the equipment and operating requirements to minimize the risks. You can use the code or standard as a checklist. The purpose of your review is to ensure that your equipment still meets the code and is being operated in appropriate ways.

Industry checklist. CMA's *Warehouse Assessment Protocol,* particularly the Warehouse Assessment (as opposed to the Management Systems Assessment), can provide the basis for a hazard review checklist. CMA and IWLA have already identified what your general hazards are and what types of equipment and procedures you should be using. Your job is to use the checklist to decide if you meet the requirements and, if you do not, whether you should. In some cases, your individual circumstances may make a checklist item unnecessary. You should tailor this checklist to add chemical-specific concerns. For example, if you handle a wide range of chemicals across hazard classes, you will want to be sure that these materials are segregated properly. The segregation criteria you use should be documented. If you have an operating engineer on staff, he or she may be able to conduct the review. If you do not have any technical staff, your vendor or trade association may be able to help you. If you seek outside help, however, work with them so that you understand what they find.

Develop your own checklist. If you do not choose to use the CMA protocol or industry standards, you will have to conduct your own hazard review. As discussed in the requirements section, the review must identify:

- The hazards of the substance and process;
- Possible equipment failures or human errors that could lead to a release;
- Safeguards used to prevent failures or errors; and
- Steps needed to detect or monitor releases.

You will probably be able to define the hazards of the substances using the MSDSs, which list the hazardous properties of the substances. The hazards of the process (as opposed to the equipment) will be limited because you may not actually handle the substance outside of the container. However, if you mix or repackage chemicals, or if you fail to segregate hazard classes, you may have process hazards that you need to define. Your safety information should help.

The next step may be to conduct a simplified What If process, where your technical staff ask for each piece of equipment and procedure, "What if this fails?" and "What if the operator fails to do this?" Most industry standards and codes have already considered these questions and developed responses, in terms of design and operating practices. If you are doing this on your own, the important thing to remember is that you should not assume that something will not happen. Ask why something could not happen and whether the safeguards that you think protect the equipment or operator are really adequate. In many cases, they may be adequate, but it is useful to ask, to force yourself to examine your own assumptions.

From this exercise, you should develop a checklist of items that you need to check. For example, you may have decided that your racks can hold a certain weight. The checklist would then include an item to check procedures to be sure that they reflect this limit. You may have identified puncturing drums with a forklift as the most likely operator error. Your checklist might then include both a check of operating procedures that address proper practices, plus a check of the width of corridors separating racks or pallets to ensure that forklift operators have enough space to maneuver.

When you finish the checklist, it is useful to show it to your operators. They are familiar with the equipment and may be able to point out other areas of concern. A review with your vendors or trade association may also help; their wider knowledge of the industry may give them ideas about failures you may not have experienced or considered.

CAUTION

Whichever approach you use, remember, you should consider external events as well as internal failures. If you are in an area subject to earthquakes, hurricanes, floods, or heavy snow you should examine whether your warehouse would survive these natural events without releasing the substance. You should consider the potential impacts of lightning strikes and power failures (e.g., if you lost heating in midwinter would that create dangerous situations?). These considerations may not be part of standard checklists. If you use these standards, you may have to modify them to address these site-specific concerns. Never use someone else's checklist blindly. You must be sure that it addresses all of your potential problems.

DOCUMENTING THE REVIEW

You should maintain a copy of the checklist you used. The easiest way to document findings is to enter them into the checklist after each item. This approach will give you a simple, concise way of keeping track of findings and recommendations. Exhibit 6-6 provides a sample of part of a checklist (adapted from the CMA Warehouse Assessment Protocol, 1996). You may also want to create a separate document of recommendations that require implementation or other resolution. EPA

does not require that you implement every recommendation. It is up to you to decide which recommendations are necessary and feasible. You may decide that other steps are as effective as the recommended actions or that the risk is too low to merit the expense. You must document your decision on each recommendation.

EXHIBIT 6-6
SAMPLE CHECKLIST

Storage and Handling	Yes	No	Comments
Are chemicals segregated from foods/consumer goods?			
Are chemicals segregated by hazard class?			
Are damaged containers marked and segregated?			
Are product temperature specifications followed?			
Are there floor markings to indicate storage spaces, aisles, staging areas, and routes?			
Are products stacked properly to height specifications in accordance with fire regulations?			
Are there indications of exceeding height requirements, such as crushed boxes?			
Are aisle distances between stacking racks appropriate for safe access with mechanical handling equipment?			
Is aisle distance maintained for safe access for fire fighting?			
Is there at least one meter between the top of the stack and sprinkler heads?			
Are products stored outside of the pathway of forced air conditioning and heating units?			
Are products stored in areas other than on the floor?			
Is there a designated area for drums or intermediate bulk containers stored outside?			
Are empty pallets stored in accordance with fire regulations?			
Are container labels visible?			

UPDATES

You must update the review every five years or whenever a major change occurs. For most warehouses, major changes will be limited. If you start storing a new substance, particularly if it is in a hazard class you have not handled before, you would want to consider whether the new type of hazard requires any additional actions (e.g., different type of fire suppression system, new segregation patterns). In most cases, adding new regulated substances in a hazard class you already handle (flammable liquids, acids) will not be considered a major change. Even if the changes prove to be minor and do not require an update, you should examine the process carefully before starting. You will operate more safely if you take the time to evaluate the hazards before proceeding.

6.4 OPERATING PROCEDURES (§ 68.52)

Written operating procedures describe what tasks a process operator must perform, set safe process operating parameters that must be maintained, and set safety precautions for operations and maintenance activities. These procedures are the guide for telling your employees how to work safely everyday, giving everyone a quick source of information that can prevent or mitigate the effects of an accident, and providing workers and management with a standard against which to assess performance.

WHAT DO I NEED TO DO?

You must prepare written operating procedures that give workers clear instruction for safely conducting activities involving a covered process. You may use standardized procedures developed by industry groups or provided in model risk management programs as the basis for your operating procedures, but be sure to check that these standard procedures are appropriate for your activities. If necessary, you must update your Program 2 operating procedures whenever there is a major change and before you startup the changed process. Exhibit 6-7 briefly summarizes what your operating procedures must address.

Your operating procedures must be:

- Appropriate for your equipment and operations;
- Complete; and
- Written in language that is easily understood by your operators.

The procedures do not have to be long. If you have simple equipment that requires a few basic steps, that is all you have to cover.

EXHIBIT 6-7
OPERATING PROCEDURES REQUIREMENTS

Steps for each operating phase	Operating limits
U Initial startup **U** Normal operations **U** Temporary operations **U** Emergency shutdown **U** Emergency operations **U** Normal shutdown **U** Startup following a normal or emergency shutdown or a major change	**U** Consequences of deviating **U** Steps to avoid, correct deviations

WHERE DO I START

If you already have written procedures, you may not have to do anything more. Review the procedures. If you are satisfied that they meet the criteria listed above, you are finished. You may want to check them against any recommended procedures provided by equipment manufacturers, trade associations, or standard setting organizations, but you are not required to do so. You are responsible for ensuring that the procedures explain how to operate your equipment and store chemicals safely.

If you do not have written procedures, you may want to check with equipment manufacturers, trade associations, or standard setting organizations. They may have recommended practices and procedures that you can adapt. Do not accept anyone else's procedures without checking to be sure that they are appropriate for your particular equipment and uses and are written in language that your operators will understand. You may also want to review any requirements imposed under state or federal rules. For example, if you are subject to federal, state, or local rules for loading and unloading of hazardous materials, those rules may dictate some procedures. Copies of these rules may be sufficient for those operations.

WHAT DO THESE PROCEDURES MEAN?

The rule lists eight procedures. Not all of them will be applicable to you if you only store substances. The following is a brief description to help you decide whether you need to develop procedures for each item. If a particular element does not apply, do not spend any time on it. We do not expect you to create a document that is meaningless to you. You should spend your time on items that will be useful to you.

Initial Startup. This item will only apply to you if you repackage or mix chemicals. For most warehouses this item is not applicable. If you handle the chemicals outside

of the containers, as opposed to simply storing and moving the containers, this item covers all the steps you need to take before you start a process for the first time. You should include all the steps needed to check out equipment as well as the steps needed to start the process itself.

Normal Operations. These procedures should cover your basic operations. These are your core procedures that you expect your operators to follow on a daily basis to run your warehouse safely. For a warehouse, these would include the following:

- Segregation and storage procedures
- Use of forklifts
- Loading and unloading
- Examination for damage and labeling
- Stock controls
- Site security
- Bracing and stacking
- Hot work
- Handling damaged containers

You may also have to cover the HVAC system if failure of this system could lead to a release.

Some of these operations are covered by federal, state, or local rules (e.g., loading and unloading may be covered by US DOT; hot work is covered by OSHA). Your procedures should represent compliance with any applicable rules.

Temporary Operations. These operations are short-term; they will usually occur either when your regular process is down or when additional capacity is needed for a limited period. The procedures should cover the steps you need to take to ensure that these operations will function safely. The procedures will generally cover pre-startup checks and determinations (e.g., can the material be segregated properly?). The actual operating procedures for running the temporary process will be written as the operation is put into place.

You may need to consider procedures to ensure that if a new substance or product is brought into the warehouse for temporary storage, the necessary steps are taken before that storage to ensure that it is safe (e.g., barrels are not stacked too high, or located with incompatible substances).

Normal Shutdown. These procedures may not apply to warehouses unless you repackage. If you do not repackage, you may not need procedures for this step unless you use automatic equipment for moving containers.

Startup following a normal or emergency shutdown or a major change. For most warehouses, these procedures are likely to be similar to those for initial startup.

Startup procedures following an emergency shutdown or a major change may include more equipment checks because you may need to check new or repaired equipment on a more frequent basis. You should include all the steps your workers should take to ensure that the process can operate safely. These procedures may not apply to warehouses in most instances.

Consequences of Deviations. Your operating procedures should tell the workers what will happen if something starts to go wrong. For example, if a rack appears to be sagging inward, the operator must know (1) whether this poses a problem that must be addressed and (2) what steps to take to correct the problem or otherwise respond to it. You should include this information in each of the other procedures (startup, normal operations, shutdowns), rather than as separate documents.

If you have substances with a distinctive odor, color, or other characteristic that operators will be able to sense, you should include in your procedures information about what to do if they notice leaks. Frequently, people are the most sensitive leak detectors. Take advantage of their abilities to catch leaks before they become serious.

Equipment Inspections. You should include steps for routine inspection of equipment by operators as part of your other procedures. These inspections cover the items that operators should look for on a daily basis to be sure that the equipment is running safely (e.g., vibration checks, leakage, overheating equipment). These inspections are not the same as those detailed checks that maintenance workers will perform, but rather are the "eyeball," "sound," and "feel" tests that experienced operators do often without realizing it. Most likely, your warehouse is already doing OSHA pre-checks and checks after work shifts. If you need further assistance, your operators, your vendors, and your trade association can help you define the things that should trigger concern: How much vibration is normal? What does a smoothly running motor sound like?

CMA PROTOCOL

The CMA *Warehouse Assessment Protocol* provides a checklist of operational practices in its Management Systems Assessment. You may want to review this list; some of the items on the list are not specifically covered by the rule (e.g., traffic office procedures), but may be important to efficient running of your warehouse. For warehouses, more than for many other businesses covered by this rule, the total operation of the business is relevant to safety. Although many of the substances you handle will not be subject to this rule, you are likely to use the same procedures that you use for covered substances for the other chemicals you store.

UPDATING PROCEDURES

You must update your procedures whenever you change your process in a way that alters the steps needed to operate safely. A change in the process, for a warehouse, is likely to involve either the introduction of new equipment or introduction of a new class of chemicals. If you add new equipment, you will need to expand your procedures or develop a separate set to cover the new items. If you store a class of chemicals you have not handled before, you will need to inform your workers of the hazards and make sure that these substances are segregated properly. Storing containers of a chemical you have not handled before, but which is part of the same class (e.g., flammables) that you already handle, would not be considered a change unless the chemical had some other hazard of concern that you have not handled before.

WHAT KIND OF DOCUMENTS DO I HAVE TO KEEP?

You must maintain your current set of operating procedures. You are not required to keep old versions; in fact, you should avoid doing so because keeping copies of outdated procedures may cause confusion. You should date all procedures so you will know when they were last updated.

6.5 TRAINING (§ 68.54)

Training programs often provide immediate benefits because trained workers have fewer accidents, damage less equipment, and improve operational efficiency. Training gives workers the information they need to understand how to operate safely and why safe operations are necessary. A training program, including refresher training, is the key to ensuring that the rest of your prevention program is effective. You already have some type of training program because you must conduct training to comply with OSHA's Hazard Communication standard (29 CFR 1910.1200) and DOT training requirements.

WHAT DO I NEED TO DO?

You must train all new workers in your operating procedures developed under the previous element; if any of your more experienced workers need training on these procedures, you should also train them. Any time the procedures are revised, you must train everyone using the new procedures. At least once every three years, you should provide refresher training on the operating procedures even if they have not changed. The training must cover all parts of the operating procedures, including information on the consequences of deviations and steps needed to address deviations. New hires should be trained before being allowed to operate equipment or handle regulated substances.

For current workers, you may certify in writing that the employees have the "required knowledge, skills, and abilities to safely carry out the duties and responsibilities as provided in the operating procedures." This "grandfather clause" means that you do not need to conduct additional training for employees who are employed prior to June 21, 1999, and who have the appropriate knowledge and skills to operate covered processes safely, in accordance with the operating procedures. This certification should be kept in your files; you do not need to submit it to EPA.

You are not required to provide a specific amount of training or type of training. You should develop a training approach that works for you. If you are a small facility, one-on-one training and on-the-job training may work best. Larger facilities may want to provide classroom training or video courses developed by vendors or trade associations before moving staff on to supervised work. You may have senior operators present the training or use trainers provided by vendors or other outside sources. The form and the length of the training will depend on your resources and your processes. If you can teach someone the basics in two hours and move them on to supervised work, that is all right. The important thing is that your workers understand how to operate safely and can carry out their tasks properly. We are interested in the results of the training, not the details of how you achieve them. Find a system that works for you. Exhibit 6-8 lists things that you may find useful in developing your training program.

HOW DOES THIS TRAINING FIT WITH OTHER REQUIRED TRAINING?

You are required by OSHA to provide training under the hazard communication standard; this training covers the hazards of the chemicals and steps to take to prevent exposures. DOT has required training for loading and unloading of hazardous materials. Some of that training will cover items in your operating procedures. You do not need to repeat that training to meet EPA's requirements. You may want to integrate the training programs, but you do not have to do so.

WHAT KIND OF DOCUMENTATION DO I NEED TO KEEP?

You are not required to maintain documentation of your training program. You may, however, want to keep an attendance log for any formal training courses and refresher training to ensure that everyone who needs to be trained is trained. Such logs will help you when you do a compliance audit; without such logs you will have to rely on your memory and the memory of your operators. Again, you are not required to keep them for this rule.

EXHIBIT 6-8
TRAINING CHART

UWho needs training?	Clearly identify the employees who need to be trained and the subjects to be covered.
UWhat are the objectives?	Specify learning objectives, and write them in clear, measurable terms before training begins. Remember that training must address the process operating procedures.
UHow will you meet the training objectives?	Tailor the specific training modules or segments to the training objectives. Enhance learning by including hands-on training like using simulators whenever appropriate. Make the training environment as much like the working environment as you can, consistent with safety. Allow your employees to practice their skills and demonstrate what they know.
UIs your training program working?	Evaluate your training program periodically to see if your employees have the skills and know the routines required under your operating procedures. Make sure that language or presentation are not barriers to learning. Decide how you will measure your employees's competence.
UHow will your program work for new hires and refresher training?	Make sure all workers – including maintenance and contract employees – receive initial and refresher training. If you make changes to process chemicals, equipment, or technology, make sure that involved workers understand the changes and the effects on their jobs.

6.6 MAINTENANCE (§ 68.56)

You have several elements you must satisfy: you must develop maintenance procedures, train your workers in these procedures, and carry out inspections and tests on your equipment; if you use a contractor for maintenance, you must ensure that the contractors are able to follow your procedures. Maintenance procedures should cover routine maintenance, inspection, and testing. For warehouses, maintenance will apply primarily to equipment used to move storage containers (lifts, conveyors, ladders, dock equipment). If you repackage regulated substances, equipment use to repackage will be covered.

WHAT DO I NEED TO DO?

You must prepare and implement procedures for maintaining the mechanical integrity of process equipment, and train your workers in the maintenance procedures. You may use procedures or instructions from equipment vendors, in Federal or state regulations, or in industry codes as the basis of your maintenance

program. You should develop a schedule for inspecting and testing your equipment based on manufacturers' recommendations or your own experience. Exhibit 6-9 briefly summarized the elements of a maintenance program that would satisfy EPA's rule.

HOW DO I START?

Your first steps will probably be to determine whether you already meet all these requirements. If you review your existing written procedures and determine that they are appropriate, you do not need to revise or rewrite them. If your workers are already trained in the procedures and carry them out, you may not need to do anything else.

If you do not have written procedures, you will need to develop them. Your equipment vendors may be able to provide procedures and maintenance schedules. Using these as the basis of your program is acceptable. Your trade association may also be able to help you with industry-specific checklists. If there are existing standards, your trade association can provide you with the references. Copies of these may form the basis for your maintenance program. If there are federal or state regulations that require certain maintenance, you should use these as well.

EXHIBIT 6-9
MAINTENANCE GUIDELINES

Written procedures	Training	Inspection & testing
U You may use someone else's procedures as the basis for your program. If you choose to develop your own, you must write them down.	U Train process maintenance employees in process hazard and how to avoid or correct an unsafe condition. U Make sure this training covers the procedures applicable to safe job performance.	U Inspect & test process equipment. U Use recognized and generally accepted good engineering practices. U Follow a schedule that matches the manufacturer's recommendations or that prior operating experience indicates is necessary.

You need to determine if procedures provided by vendors, manufacturers, trade associations, or others are appropriate for your operation. If you are operating in a standard way (e.g., using your equipment in the way it was designed for), you may assume that these other procedures will work for you. If you are using equipment for purposes other than those for which it was designed, your best option is obtain appropriate equipment. In the interim, you should consult with the equipment manufacturer or vendor to decide whether your use is safe and whether you need to

upgrade maintenance practices or increase the frequency and rigor of inspection and testing.

TRAINING

Once you have written procedures, you must ensure that your maintenance workers are trained in the procedures and in the hazards of the process. As with the training discussed in the previous section, how you provide this training is up to you. We believe that you are in the best position to decide how to train your workers. Vendors may provide the training or videos; you may already provide training on hazards and how to avoid or correct them as part of Hazard Communication Standard training. You do not need to repeat this training to comply with this rule. New hires or temporary workers must be trained before they perform maintenance on covered equipment.

If you hire contractors to do your maintenance, you must ensure that they are trained to carry out the procedures. You can do this by providing training or by developing agreements with the contractor that gives you the assurance that only trained workers will sent to your site. In some cases, you may be able to rely on licenses (e.g., electricians).

INSPECTION AND TESTING

You must establish a schedule for inspection and testing equipment associated with covered processes. You may obtain recommendations from manufacturers, vendors, or trade associations. You should, however, use your own experience as a basis for examining any schedules you obtain from others. Many things may affect whether a schedule is appropriate. The manufacturer may assume a certain rate of use. If your use (e.g., the hours per day a forklift is operated) varies considerably, the variations may affect the wear on the equipment. Extreme weather conditions may also impact wear on equipment.

Talk with your operators as you prepare or adopt these procedures and schedules. If their experience indicates that equipment fails more frequently than the manufacturer expects, you should adjust the inspection schedule to reflect that experience. Your trade association may also be able to provide advice on these issues.

WHAT KIND OF DOCUMENTATION MUST I KEEP?

You must keep your written procedures and schedules as well as any agreements you have with contractors. You are not required to keep training logs or maintenance logs to comply with this rule. You may, however, want to maintain such logs for your own use. Without some record, you will have to rely on workers' memories about when something was last checked. As workers leave or change jobs at your company, it can be difficult to keep track of when inspections and tests were done.

Maintaining a record of when something was last done or is scheduled to be done next can help keep your program working smoothly.

6.7 COMPLIANCE AUDITS (§ 68.58)

Any risk management program should be reviewed periodically to ensure that employees and contractors are implementing it properly. A compliance audit is a way for you to evaluate and measure the effectiveness of your risk management program. An audit reviews each of the prevention program elements to ensure that they are up-to-date and are being implemented and will help you identify problem areas and take corrective actions. As a result, you'll be running a safer operation.

WHAT DO I NEED TO DO?

At least every three years, you must certify that you have evaluated compliance with EPA's requirements for the prevention program for each covered process. At least one person on your audit team must be knowledgeable about the process. You must develop a report of your findings, determine and document an appropriate response to each finding, and document that you have corrected any deficiency.

The purpose of the compliance audit is to ensure that you are continuing to implement the risk management program as required. Remember, the risk management program is an on-going process; it is not a set of documents that you develop and put on a shelf in case the government inspects your site. To be in compliance (and gain the benefits) procedures must be followed on a daily basis; documents must be kept up to date. The audit will check these items and provide you with items that need to be improved.

You must check each of the items in the prevention program. Because you have simple procedures, the audit should not take a long time. You may want to use the CMA protocol as the basis of your audit or tailor it to fit your operation.

Once you have the checklist, you, your chief operator, or some other person who is knowledgeable about your process, singly or as a team, should walk through the facility and check on each of the items, writing down comments and recommendations. You may want to talk with employees to determine if they have been trained and are familiar with the procedures.

You must respond to each of the findings and document what actions, if any, you take to address problems. You should take steps to correct any deficiencies you find.

You may choose to have the audit conducted by a qualified outside party. For example, you may have someone from another part of your company do the audit or hire an expert in warehousing. If you do either of these, you should have someone work with the person, both to understand the findings and answer questions.

Remember, this is an audit of compliance with the prevention program of this rule. You may choose to expand the scope of the audit to cover your compliance with other parts of the rule and the overall safety of your operation, but you are not required to do so.

WHAT KIND OF DOCUMENTATION MUST I KEEP?

You must keep a written record of the findings and actions for five years. You may also want to keep a record of who conducted the audit, but you are not required to do this. Exhibit 6-10 provides a sample format for documenting the audit and subsequent actions.

Q and A
AUDITS

Q. Do the compliance audits cover all of the Part 68 requirements or just the prevention program requirements?

A. The compliance audit applies only to the requirements of the prevention programs under Subpart C. If you have a Program 2 process you must certify that you have evaluated compliance with the Program 2 prevention program provisions at least every three years to verify that the procedures and practices developed under the rule are adequate and are being followed. You may want to expand your audit to check other part 68 elements but you are not required to do so.

6.8 INCIDENT INVESTIGATION (§ 68.60)

Incidents can provide valuable information about site hazards and the steps you need to take to prevent accidental releases. Often, the immediate cause of an incident is the result of a series of other problems that need to be addressed to prevent recurrences. For example, an operator's mistake may be the result of poor training. Equipment failure may result from improper maintenance or misuse. Without a thorough investigation, you may miss the opportunity to identify and solve these problems.

EXHIBIT 6-10
SAMPLE AUDIT CHECKLIST
FOR SAFETY INFORMATION AND HAZARD REVIEWS

Element	Yes/No/NA	Action/Completion Data
Safety Information		
MSDSs updated?		
Maximum intended inventory determined?		
Determined Safe upper and lower temperature? Segregation of incompatible substances		
Equipment specifications Forklifts Fire suppression systems Ventilation system		
Hazard Review		
Are incompatible materials appropriately segregated?		
Is the fire suppression system appropriate for materials stored?		
Are stack heights in accordance with industry standards and codes?		
Has equipment been inspected to determine if it is operated according to industry standards and codes?		
Are the results of the inspections documented?		
Have inspections been conducted after every major change?		

WHAT DO I NEED TO DO?

You must investigate each incident that resulted in, or could have resulted in a "catastrophic release of a regulated substance." A catastrophic release is one that presents an imminent and substantial endangerment to public health and the environment. The easiest way to understand imminent and substantial endangerment is to consider whether the release could have exposed the public to levels that exceed the toxic or flammable endpoints. If a release had that potential, even if no such exposure occurred (because of favorable weather conditions or because the adjoining facilities were unoccupied at the time), you should investigate. Most warehouse accidents will not meet this criterion; minor spills of toxic substances that are contained within the warehouse building are unlikely to represent a potential catastrophic release. Minor fires, however, may represent potential catastrophic releases if the fire had the potential to spread and release toxic substances. Spills of toxic regulated substances outside may pose a threat to the public and should be investigated. Exhibit 6-11 briefly summarizes the steps you must take for investigating incidents.

EXHIBIT 6-11
INCIDENT INVESTIGATION REQUIREMENTS

U **Initiate an investigation promptly**.	Begin investigating no later than 48 hours following the incident.
U **Summarize the investigation in a report.**	Among other things, this report will include the factors contributing to the incident. Remember that identifying the root cause may be more important than identifying the initiating event. Remember, also, that the purpose of the report is to help management take corrective action.
U **Address the team's findings and recommendations.**	Establish a system to address the incident report findings and recommendations and document resolutions and corrective actions.
U **Review the report with your staff and contractors.**	You must share the report - its findings and recommendations - with affected workers whose job tasks are relevant to the incident.
U **Retain the report.**	Keep incident investigation summaries for five years.

HOW DO I START?

You should start with a simple set of procedures that you will use to begin an investigation. You may want to assign someone to be responsible for compiling the initial incident data and putting together the investigation team. If you have a small facility, your "team" may be one person who works with the local responders, if they were involved.

The purpose of the investigation is to find out what went wrong and why, so you can prevent it from happening again. Do not stop at the obvious failure or "initiating event" (e.g., the hose was clogged, the operator forgot to check the connection); try to determine why the failure occurred. If you write off the accident as operator error alone you miss the chance to take the steps needed to prevent such errors the next time. Similarly, if equipment fails, you should try to decide whether it had been used or maintained improperly.

Remember, your goals are to prevent accidents, not to blame someone, and correct any problems in your prevention program. In this way, you can prevent recurrences.

In many cases, an investigation will not take long. If you have a complex facility, if equipment has been severely damaged, or the workers seriously hurt, an investigation may take several days. You should talk with the operators who were in the area at the time and check records on maintenance (another reason for keeping logs). If equipment has failed in an unusual way, you may need to talk to the manufacturer and your trade association to determine if similar equipment has suffered similar failures.

You must develop a summary of the accident and its causes and make recommendations to prevent recurrences. You must address each recommendation and document the resolution and any actions taken. Finally, you must review the findings with operators affected by the findings.

WHAT KIND OF DOCUMENTATION MUST I KEEP?

You must maintain the summary of the accident, recommendations, and actions. A sample format is shown in Exhibit 6-12 that combines all of these in a single form. Note that the form also includes accident data that you will need for the five-year accident history. These data are not necessarily part of the incident investigation report, but including them will create a record you can use later to create the accident history.

6.9 CONCLUSION

Many of you will need to do little that's new to comply with the Program 2 prevention program, because you already are complying with many program elements through other Federal rules, state requirements, and industry-specific codes and standards. And if you've voluntarily implemented OSHA's PSM standard for your Program 2 process, you'll meet the lesser Program 2 prevention program requirements. No matter what choices you make in complying with the Program 2 prevention program, keep these things in mind:

Integrate the elements of your prevention program. For Program 2 owners and operators, a major change in any single element of your program should lead to a review of other elements to identify any effect caused by the change.

Make accident prevention an institution at your site. Like the entire risk management program, a prevention program is more than a collection of written documents. It is a way to make safe operations and accident prevention the way you do business everyday.

Check your operations on a continuing basis and ask if you can improve them to make them safer as well as more efficient.

EXHIBIT 6-12
SAMPLE INCIDENT INVESTIGATION REPORT

Hydrofluoric Acid Release		
Date: May 15, 1998; 3 pm	Substance: Hydrofluoric acid (70%)	Quantity: 1800 pounds
Duration: 2 hours	Weather: 82E F, 8 mph winds, WSW	
Description:	A forklift punctured two 55-gallon drums of HF and severely damaged two other drums on the pallet, which then split open as they fell off the loading dock. Five workers and two local responders were treated for exposure. Neighboring facilities were notified to shelter in place.	
Findings	**Recommendations**	**Actions**
The forklift controls stuck.	Institute more frequent inspections and tests of the forklifts.	Changed inspection and testing intervals; revised procedures; conducted training on new procedures

Hydrofluoric Acid Release		
Operator and other workers left the scene to protect themselves. It took 15 minutes for the hazmat staff to suit up and begin responding.	Conduct exercises quarterly for hazmat staff. Conduct refresher training for other staff on evacuation and notification procedures.	Exercise schedule established. Refresher training provided; safety meetings added and held on a monthly basis to review safety issues
Inadequate quantities of neutralizer were available. Supply had not been replenished after several minor spills.	Check and replenish supply monthly or after each use.	Routine checks added to work order schedule.